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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,311	06/30/2005	Kiyotaka Yasuda	8007-1088	5984

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EXAMINER	
HAN, KWANG S	
ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
03/29/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

Office Action Summary	Application No.	Applicant(s)	
	10/522,311	YASUDA ET AL.	
	Examiner	Art Unit	
	Kwang Han	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-15 and 17-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-15 and 17-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

ELECTRODE FOR SECONDARY BATTERY, PROCESS OF PRODUCING THE ELECTRODE, AND SECONDARY BATTERY

Examiner: K. Han SN: 10/522,311 Art Unit: 1795 March 26, 2010

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 29, 2009 has been entered. Claim 13 was amended.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. Claim 13 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification and the figures do not provide support for describing the electrically conductive metallic material which is deposited on the active material particles to be "continuously" filled. Figures 8, 10, and 11 of the

specifications provide for photomicrographs of the cross section of the deposited active layer showing discrete particles within the layer, but are not necessarily continuous.

Claim Rejections - 35 USC § 102

4. Claims 13, 14, and 17-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawakami et al. (US 6051340) is maintained.

Regarding claim 13, Kawakami is directed towards an electrode for a secondary battery [Abstract] comprised of the following:

- a first and a second surface (Figure 4(a) and 4(d)) both with electrical conductivity and brought into contact with an electrolytic solution (11:38-53),
- an active material layer containing a powdery material (103) positioned between the first and second surface (10:6-33; Figures 4(c) and Figure 4(d)) subject to a sintering treatment (14:1-3),
- the powdery material containing alloyable metal (active material) and non-alloyable material (electrically conductive metallic material) mixed together (13:50-66),
- an electrically metal layer (101) in the middle of the thickness direction, and
- the active material is present on both sides of the conductive foil (Figure 4(d); 10:25-33).

Regarding claim 14, Kawakami discloses an example of an anode electrode having a total thickness of between 50 to 110μm (Columns 21-24).

Regarding claim 17, Kawakami discloses the electrode as an anode [Abstract].

Regarding claims 18 and 19, Kawakami discloses the surface of the anode to be covered by an insulating film (16:23-26) which allows the lithium ions to pass. The layers are formed from a powdery material formed from a sintered body (5:22-30) which would inherently have a porous structure (microvoids) allowing the electrolyte to pass.

Regarding claim 20, Kawakami discloses the formation of the layer comprised of the alloyable (active material particles) and nonalloyable metal with electrically conductive auxiliary to form the anode which has a current collecting function as a whole (13:53-14:36).

Regarding claim 21, Kawakami teaches examples of the electrode having a total thickness as discussed for claim 14. The insulating film is disclosing as a surface layer formed by an insulating film (16:23-26) which has the property of allowing lithium ion to pass but prohibiting lithium metal. This film would inherently have a fractional thickness within the total thickness of the electrode.

Regarding claim 22, Kawakami discloses active material having a metal capable of being alloyed with lithium (103) (10:9-10).

Regarding claims 23 and 24, Kawakami discloses forming the active material layer by obtaining a paste (slurry) and surface layers by electroplating (13:11-14:3).

Regarding claim 25, the teachings of Kawakami as discussed above are herein incorporated. Kawakami further teaches a nonalloyable metal (material with "lower" capability of forming a lithium compound) in the active material layer (13:39-46).

Regarding claim 26, Kawakami discloses a multilayer structure of the anode layer where the metal incapable of being alloyed with lithium is at an enhanced content at the anodes surface forming a multilayer surface in combination with the insulating film (5:13-21; Figure 4d).

Regarding claim 27, Kawakami discloses the powdery material comprising the active material layer are mixed together (13:50-66) which would inherently have some degree of porosity (vacant spaces) due to the nature of the powder material.

Claim Rejections - 35 USC § 103

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. as applied to claim 13 above and further in view of Beard (US 5147739).

Regarding claim 15, the teachings of Kawakami as discussed above are herein incorporated. Kawakami discloses active material having a metal capable of being alloyed with lithium (103) (10:9-10) but is silent towards a metallic lithium layer provided between the conductive foil and the active material layer.

Beard teaches a lithium battery comprised of having an anode with a current collector 13, metallic lithium layer 14, and an active material layer 15 (Figure 1A) for the benefit of providing a electrochemical cell with the full voltage available from a pure

lithium anode without the problems of dendritic growth or lithium cycling loss (5:25-6:6). It would have been obvious to one of ordinary skill in the art at the time of the invention have a metallic lithium layer between the conductive foil and active material layer of Kawakami because Beard teaches that this configuration provides a battery which has the full voltage available from a pure lithium electrode without the problems of dendritic growth or lithium cycling loss.

Response to Arguments

6. Applicant's arguments filed January 29, 2009 have been fully considered but they are not persuasive.

Applicant's principal arguments are:

(a) the powdery material of Kawakami is not the same as "the active material layer further contains an electrically conductive metallic material which is deposited on the active material particles and is continuously filled between the active material particles over the entire thickness direction of the active material layer" because the powdery material used in Kawakami forms discrete structures, and

(b) the photomicrographs of Figures 8, 10, and 11 provide evidence of a continuous and integrated structure which is different from the structure as provided by Kawakami.

In response to Applicant's arguments, please consider the following comments:

(a) the powdery material of Kawakami provides for an alloyable metal (active material) and non-alloyable material (electrically conductive metallic material) which are mixed together to form the active material layer as discussed above. The use of a powdery

material does not exclude the formation of the continuous and integrated structure since Kawakami teaches the layer is further subjected to binding, drying and sintering (14:1-3). Furthermore, the Applicant's active material layer's structure as shown in Figures 5 and 6 providing for one discrete material bound in a matrix of a second material are similar to the active material layer as shown in Figures 4(c) and 4(d) of Kawakami, (b) the photomicrographs as shown in Figures 8, 10, and 11 provide evidence of a deposited layer formed of one discrete material bound in a matrix of a second material. These micrographs do not provide for a material which would exclude the teachings of layer formed by powdery material which are bound and sintered together. On the contrary, one of ordinary skill in the material science/microscopy art would view the material layer as shown in the micrograph of Figure 10, could be formed by various deposition methods which include a blend of 2 different powder shaped materials of different particles sizes. Furthermore the pull out regions (dark regions within layer) as shown in the photomicrograph of Figure 11 (at the shown magnification of 1500X) would suggest the particles forming the layer are spherical in the 2-8 micron range which could be formed by deposited powders.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Han whose telephone number is (571) 270-5264. The examiner can normally be reached on Monday through Friday 8:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. H./
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795